REMARKS

Claims 1-12 and 14 are pending. Independent claims 1 and 2 are currently amended.

Claims 1-12 and 14 were rejected under 35 U.S.C. § 103(a) as unpatentable over Sakamoto et al. (U.S. Patent No. 6,528,879 B2) in view of Dery et al. (U.S. Patent No. 6,074,895). In view of the amendments and following remarks, applicants respectfully request reconsideration and withdrawal of these rejections.

Amended claims 1 and 2 recite a method for manufacturing a circuit device that includes: (a) forming separation grooves in a conductive foil to form conductive patterns; (b) mounting a circuit element onto the conductive patterns; (c) irradiating the conductive foil with a plasma; (d) filling and covering the separation grooves and circuit element with a sealing resin; and (e) "covering a portion of the resin layer, which is exposed from intervals separating the conductive patterns, with a resist." An example of (e) is shown in FIG. 9 of the present application in which resist 26 covers a portion of sealing resin 28 exposed from separation groove 11. In certain implementations, irradiating the separation grooves 11 with a plasma allows contaminants attached to the side surfaces of the groove to be removed. As a result, contaminants may not adhere to the interface between the sealing resin 28 and separation groove 11. Upon removing the conductive foil to expose sealing resin 28, the exposed surface will then be absent of contaminants. Therefore, when a resist 26 is applied to the exposed surface of sealing resin 28, the adhesion strength between the sealing resin 28 and resist 26 may be improved.

Sakamoto et al. discloses a method of manufacturing a semiconductor device (*see* FIGS. 14-21C) that includes a process for removing portions of a conductive foil 100, such that separation grooves 101 and conductive paths 102 are formed (col. 18, lines 30-67 – col. 19, lines 1-39). Circuit elements 105 are then mounted on the conductive foil 100 in which the separation grooves 101 are formed (col. 19, lines 40-62). An insulating resin 103 is then attached to the conductive foil 100 and separation grooves 101 (col. 19, lines 63-67 – col. 20, lines 1-19).

Following this, the back surface of the conductive foil 100 is chemically and/or physically removed (col. 20, lines 30-61). However, Sakamoto et al. does not disclose that a top surface of the conductive foil 100 is irradiated by a plasma. The Office action relies on the Dery et al. patent for this feature (page 3, Office action).

Dery et al. discloses the use of either an oxygen or argon plasma for the purpose of enhancing adhesion between an encapsulant material 140 and the surfaces of a chip 111a and chip carrier 124 by virtue of chemically modifying or micro-roughening the chip passivation layer and cleaning of contaminants from the chip surfaces (col. 3, line 38 – col. 5, line 20).

The Office action alleges that it would have been obvious to one of ordinary skill in the art to have combined the above references in order to obtain the present claims. Applicants respectfully disagree.

First, there would have been no motivation for one of skill in the art to modify the Sakamoto et al. patent. In particular, the Sakamoto et al. reference does not disclose or suggest, in any way, why one of ordinary skill in the art would have been motivated to irradiate the top surface of conductive foil 100 or separation grooves 101 with a plasma.

Furthermore, although the Dery et al. patent discloses using a plasma to enhance adhesion, the Dery et al. patent does not disclose using the plasma to irradiate a top surface of a "*conductive foil*" as recited in independent claims 1 and 2. Instead, the Dery et al. patent discloses that the plasma is applied to chip passivation layer 111, which consists of an organic material such as polyimide (col. 3, lines 48-49), as well as chip carrier surface 124, which comprises an epoxy solder resin having inorganic filler particles (col. 4, lines 13-15). Neither the chip passivation layer 111 nor the chip carrier surface 124 correspond to a "conductive foil." Therefore, it would not have been obvious to one of ordinary skill in the art to use the plasma as applied in the Dery et al. patent in order to irradiate a top surface of a "conductive foil" in the Sakamoto et al. patent.

At least for these reasons, independent claims 1 and 2 should be allowed.

Claims 3-12 and 14 depend from claims 1 and 2 and should be allowed for at least the same reasons.

It is believed all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

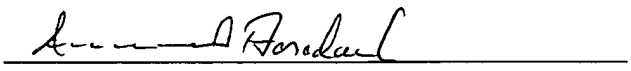
Conclusion

In view of the above remarks, all remaining claims are allowable and a notice of allowance should be issued.

Although no fee is believed due, please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: 3/10/06



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